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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/966,502	09/28/2001	Peidong Wang	CORE-84	7227

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EXAMINER
INZIRILLO, GIOACCHINO

ART UNIT	PAPER NUMBER
2828	

DATE MAILED: 07/05/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/996,502

Applicant(s)

KILGARIFF ET AL.

Examiner

Gioacchino Inzirillo

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.


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Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____ 6) ☐ Other: ____

DETAILED ACTION

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims.

- 1) Claim 1 recites how the top and bottom electrodes are further apart than the top and bottom mirror.
- 2) Claim 2 recites how the top electrode is further from the substrate than the top mirror form the substrate.
- 3) Claim 3 recites that the top surface of the bottom mirror is located further from the substrate than the top surface of the bottom electrode.
- 4) Claim 4 recites that the top and bottom electrodes are spaced further apart from one another than the top mirror is spaced from the bottom mirror.
- 5) Claim 5 recites that the top electrode is spaced further from the substrate than the top mirror is spaced from the substrate.
- 6) Claim 6 recites that the top surface of the bottom mirror is located further from the substrate than the top surface of the bottom electrode.

Therefore, these limitations must be shown or the features canceled from the claims. No new matter should be entered.

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A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1 – 6 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The following limitations are not supported in the specification.

- 1) Claim 1 recites how the top and bottom electrodes are further apart than the top and bottom mirror.
- 2) Claim 2 recites how the top electrode is further from the substrate than the top mirror form the substrate.
- 3) Claim 3 recites that the top surface of the bottom mirror is located further from the substrate than the top surface of the bottom electrode.
- 4) Claim 4 recites that the top and bottom electrodes are spaced further apart from one another than the top mirror is spaced from the bottom mirror.

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5) Claim 5 recites that the top electrode is spaced further from the substrate than the top mirror is spaced from the substrate.

6) Claim 6 recites that the top surface of the bottom mirror is located further from the substrate than the top surface of the bottom electrode.

Furthermore, according to the specification, it is the opposite of these limitations that are the true relationships in the invention, (i.e.) "closer to" instead of "further from".

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

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Claims 1 – 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tayebati US 5,739,945 (herein after known as Tayebati) in view of Blomberg et al. US 5,561,523 (herein after known as Blomberg).

Regarding claims 1 and 7, Fig. 7 of Tayebati shows a tunable Fabry-Perot filter comprised by a bottom mirror (see inset circle) and a top mirror separated by an air gap. Thin polyimide beams make up a thin membrane, upon which the top mirror sits. The top mirror is not a confocal mirror. However, it would be obvious to one of skill in the art to substitute the mirror of Tayebati with a confocal one because the curvature of such mirrors will result in different levels of focusability which are in important, for example, when coupling light directly into a fiber.

~~Although~~ Tayebati does not disclose the locations of the top and bottom electrodes in Fig. 7, ~~they are inherent in the invention.~~ The device is an electrically tunable filter, which according to column 6 lines 8 – 11 operates by applying an electric field to the electrodes. As for the locations of the electrodes, it would only require routine experimentation of one skilled in the art to determine the optimal location for the electrodes. Tayebati shows an embodiment in Fig. 5c, where the electrodes are placed further apart than the mirrors are. Tayebati teaches the invention as outlined in the rejection above, but fails to teach a reinforcer fixed to the outside perimeter of the thin membrane support. However, Blomberg teaches this in Fig. 1b of his patent. Fig. 1b shows the thin membrane, designated by denoting its center area 24, sitting atop and supported by the supports 7. A portion shown on the periphery of the thin membrane is a structural reinforcer.

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Regarding claims 4 and 12, these claims are obvious over Tayebati Figs. 1b and 1d. Fig. 1b is a tunable filter, and 1d is a tunable vertical cavity surface emitting laser (VCSEL). As can be seen in the figures, and understood by one of ordinary skill in the art, the only difference between the laser and the filter is the addition of an active region to the filter represented by a multiple quantum well (MQW) to provide gain. Therefore, it would be obvious to one of ordinary skill in the art to add an active region to the filter in Fig. 7 of Tayebati, since Tayebati already teaches the addition of an active region to a filter in other embodiments.

Regarding claims 2 and 5, Fig. 5c of Tayebati shows an embodiment where the top electrode is further from the substrate than the top mirror is spaced from the substrate.

Regarding claims 3 and 6, Fig. 5c of Tayebati shows an embodiment where the top surface of the bottom mirror is located further from the substrate than the top surface of the bottom electrode.

Regarding claims 8 – 11 and 13 – 16, Tayebati teaches the invention as outlined in the rejection above, but fails to teach optimizing the electrode structure with a particular shape. However, Blomberg discloses this in his patent. Blomberg discloses two electrode structures in Figs. 1a and 1b. The prior art figure teaches an annular electrode 6, while the Blomberg invention teaches an improvement over the prior art figure by substituting a ring electrode 20 for the annular one. Furthermore, finding the optimum shape for a particular device would require routine skill in the art. Therefore, it would be obvious to one of ordinary skill in the art to optimize the electrodes of Tayebati with a particular shape as taught by Blomberg.

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Prior Art


The following US patents are being made of record, even though they were not relied upon in this Office Action, for being similar in subject matter, and may be relied upon in any future Office Actions: 6243407, 5500761, 5291502.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gioacchino Inzirillo whose telephone number is 703-305-1967. The examiner can normally be reached on M-F 8:30AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Ip can be reached on 703-308-3098. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7721 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

June 20, 2002


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